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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,764	12/03/2003	H. Grant Wang	30302/014252	7578

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EXAMINER

HOLZEN, STEPHEN A

ART UNIT	PAPER NUMBER
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3644

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/727,764

Applicant(s)

WANG ET AL.

Examiner

Stephen A. Holzen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 25, 26, 33 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 27-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 25-26 and 33-34 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 8/17/2004. The examiner respectfully disagrees with the applicant's arguments. The examiner demonstrated the independence and distinctness of groups I, II, and III in the office action mailed on 8/17/2004, and also demonstrated the burden of searching more than one invention in that office action.

2. This application contains claim 25, 26, 33 and 34 drawn to an invention nonelected with traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-10, 16, 21,22 are rejected under 35 U.S.C. 102(e) as being anticipated by Xing et al. (6341,249). Xing et al disclose an attitude determination and control system for a spacecraft comprising a unified attitude sensor set that is adapted for use during all phases of spacecraft operations, see col. 4, lines 34-41 (4/34-41), a processor capable of determining and controlling attitude of said spacecraft during said operations using sensor inputs from the unified attitude sensor set (1/59-64).

Re – Claims 2-10,12,16, 21,22: wherein the unified attitude senses set includes at least one star tracker (4/34-41), wherein the spacecraft is maneuvered at a rate that is within the star tracker tracking rate limit (4/34-41), wherein star tracker data is used at least in part to determine spacecraft rate (4/34-41), wherein star tracker data is used at least in part to determine spacecraft attitude (4/34-41), wherein the unified attitude sensor set further includes at least one inertial measurement unit (4/34-41), wherein the inertial measurement unit is a gyro device (4/34-41), wherein the gyro device is used at least in part to determine spacecraft rate (4/34-41), wherein the gyro device is used at least in part to determine the spacecraft attitude (4/34-41), wherein the star tracker data is used at least in part to determine the spacecraft attitude (4/34-41), wherein the spacecraft operations include at least transfer orbit operations and on-station operations (1/20-21), having a sun sensor, wherein the processor includes electronic hardware (inherent), wherein the process includes software (inherent).

Re – Claims 11,13-15: These claims are purely functional in nature and have not been afforded any patentable weight.

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5. Claims 27-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Xing et al.

Re – Claims 27, 29 and 31: Xing disclose an attitude determination and control system for a spacecraft comprising a plurality of star trackers adapted for use during all phases of spacecraft operations, a processor capable of determining and controlling the attitude of the spacecraft during the spacecraft operations using inputs from the star trackers (4/34-41) and gyros and attitude sensors data (4/34-52)

Re – Claim 28, 30 and 32: wherein the spacecraft operations include transfer orbit operations and on-station operations (1/59-62)

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 17 –20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xing et al in view of ordinary skill in the art. Since Xing et al teaches the use of thrusters and the claimed invention uses only variants of known thrusters, it would have been obvious to use any of these thruster as a matter of design choice.

Bi-Propellant: Janson et al (6,725,012)

Electrical Propulsion: Massonnet (6,264,143)

XIP Engine: Yocum Jr. et al (6,260,805)

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Hall Effect Thruster: Biber (6,036,143)

8. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xing et al in view of ordinary skill in the art. Xing et al discloses every aspect of the present invention except wherein the spacecraft has its solar wings stowed and wherein the spacecraft has its solar wing deployed. The examiner takes OFFICIAL NOTICE that stowed and deployed solar wings are known in the art, and would have been obvious to use deployable wings because a stowed/deployed configuration aids in the transfer from earth to orbit, by saving space on the launch vehicle, where space is limited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen A. Holzen whose telephone number is 703-308-2484. The examiner can normally be reached on M-F 7:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 703 305-7421. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, appearing to read 'Teri Luu', is positioned above the printed name and title.

**TERI PHAM LUU  
SUPERVISORY  
PRIMARY EXAMINER**